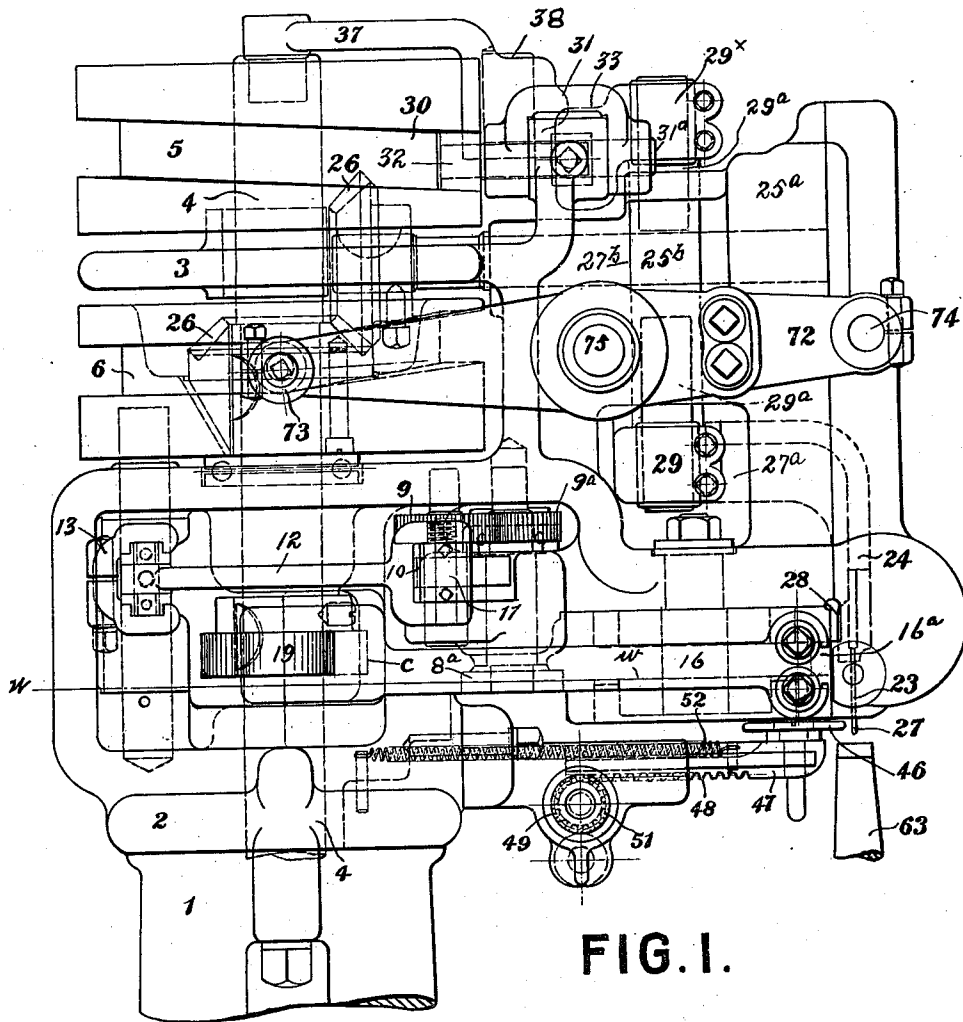


M. T. DENNE.
SLUGGING OR NAILING MACHINE.
APPLICATION FILED OCT. 22, 1907.

1,029,108.

Patented June 11, 1912.

5 SHEETS—SHEET 1.



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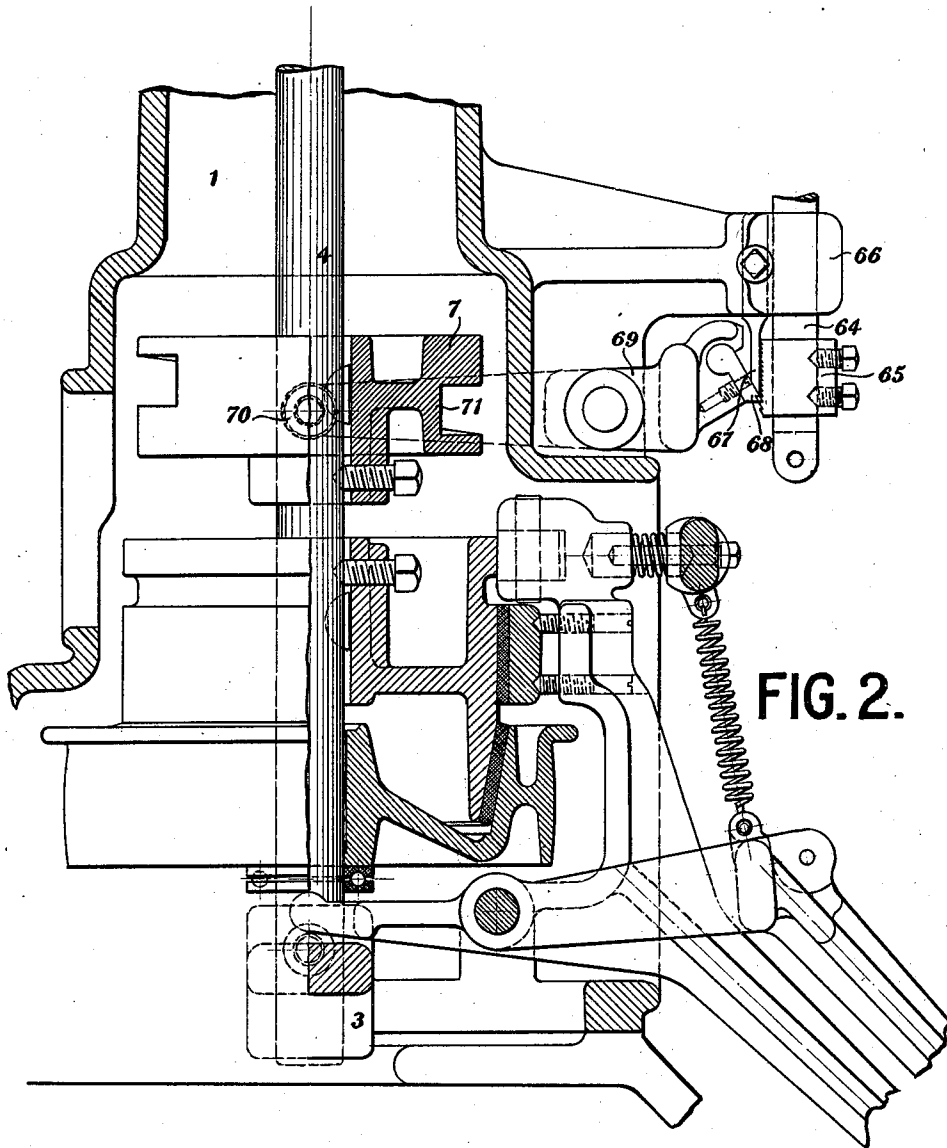


FIG. 2.

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5 SHEETS—SHEET 3.

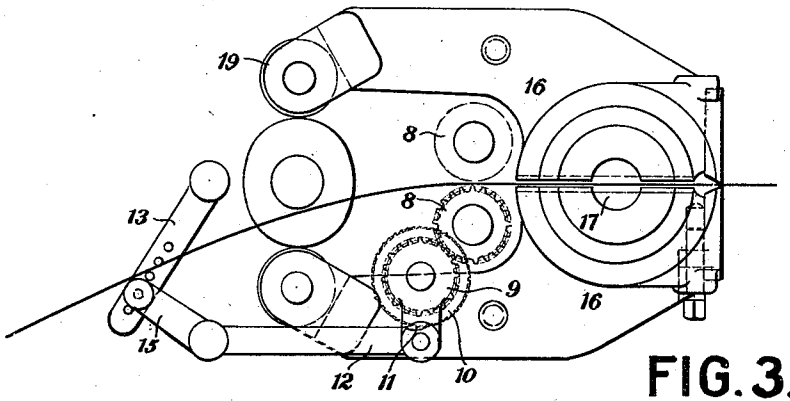


FIG. 3.

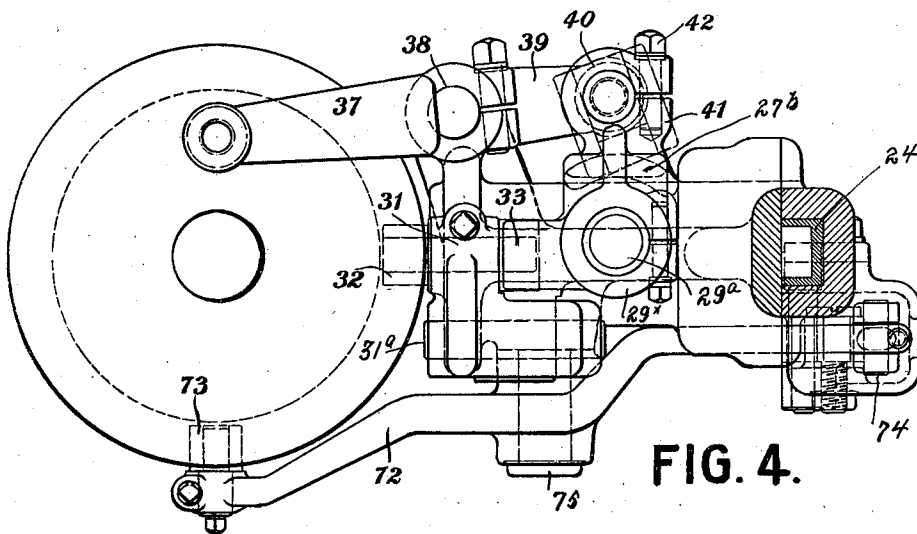


FIG. 4.

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6 SHEETS—SHEET 4.

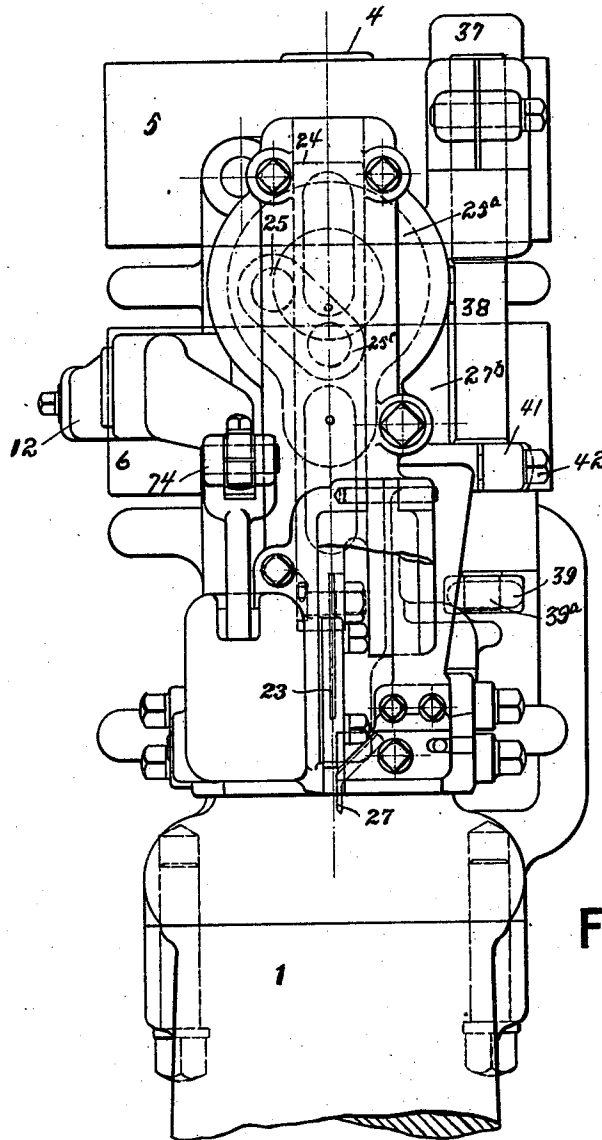


FIG. 5.

Witnesses:
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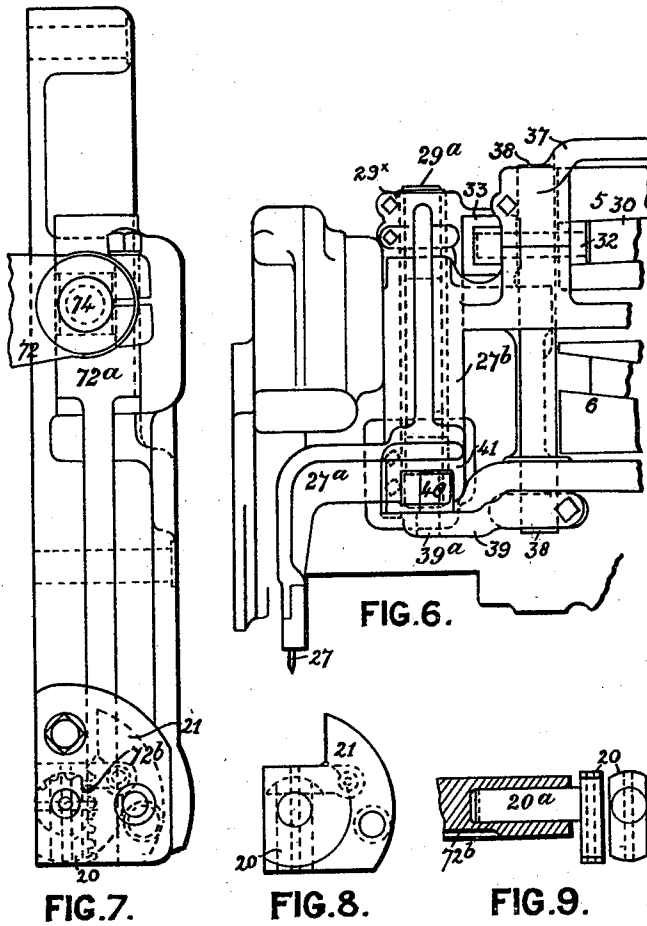
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6 SHEETS—SHEET 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

MARK THOMAS DENNE, OF RUSHDEN, ENGLAND.

SLUGGING OR NAILING MACHINE.

1,029,108.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed October 22, 1907. Serial No. 398,589.

To all whom it may concern:

Be it known that I, MARK THOMAS DENNE, a subject of the King of Great Britain and Ireland, residing at Rushden, Northamptonshire, England, have invented new and useful Improvements in Slugging or Nailing Machines, of which the following is a specification.

This invention has reference to improvements in slugging or nailing machines of the class in which a wire is intermittently fed horizontally into a carrier, a length cut off therefrom to form a slug, and the carrier then turned to present the slug vertically under a driver, the stock being fed forward intermittently by means of an awl which makes the holes to receive the slugs.

The nature of the improvement is fully set forth in the following description taken in connection with the accompanying drawings and then more particularly pointed out in the appended claims.

Referring to the accompanying drawings:—Figure 1 is a side elevational view of the working head with its operating mechanism. Fig. 2 is a side elevational view, partly in section, of means for automatically operating the horn. Fig. 3 is a plan view of the wire feeding and nipping or cutting off mechanism. Fig. 4 is a plan view of the means for imparting vertical and horizontal movements to the awl. Fig. 5 is a front view of the working head. Fig. 6 is a right hand side elevational view of the means for imparting vertical and horizontal movements to the awl, and Figs. 7, 8 and 9 are views showing the slug carrier or tumbler and the means for operating same.

In said drawings 1 indicates a pillar of suitable construction to support the head 2 of the machine, the said pillar and head having several bearings 3 to carry a vertical driving shaft 4 the upper end of which has fixed on its cams, 5, 6 and C to operate the working parts carried by or on said head and the lower end of which shaft has on it a cam 7 to operate the horn to permit the insertion and removal as well as the feeding forward of the work.

The slugs or nails are cut from a continuous length of wire (indicated by the line *w* and a coil of which is carried at a convenient position say at the back of the machine) which wire is fed in a horizontal direction by feed rolls 8, 8^a. One of the feed rolls

(8^a) has on its spindle a toothed wheel 9^a which is in gear with a similar toothed wheel 9 provided with a ratchet wheel 10 with which a pawl 11 carried by a radius arm 11^a engages. Reciprocating motion is imparted to the arm 11^a by a lever 13 pivotally mounted at 13^a and deriving motion from a cam groove (not shown) in the lower face of the cam 6 the said lever 13 and arm 11^a being connected by a link 12, the connection on 13 being adjustable as will be understood from Figs. 1 and 3 so that the throw of the arm 11^a and consequently the length of wire fed may be regulated as desired.

As the wire is fed forward by the feed rolls it passes between a pair of levers 16 pivotally supported at 17 and thence between a pair of cutters 16^a fixed to the ends of said levers by wedges 18. The opposite ends of the levers 16 are provided with rolls 19 which engage with the cam C so that at the proper time the levers will be operated to cut off a length of wire to form a nail or slug. The end of the wire which is to be cut off to form the slug enters a carrier 20 (shown separately in side and in end elevation in Fig. 9) and the slug having been cut off the carrier is rotated within a shell or equivalent 21 until said slug is vertically under a driver 23. The movement at the correct time of the carrier in the manner described is obtained by a lever 72 pivoted at 75 and having a roll 73 in engagement with the cam 6 the other or free end of the said lever having a rod 72^a attached to it whose other end is toothed and engages a toothed sleeve 72^b adapted to receive the shank 20^a of the carrier 20 and with which it is so connected that it rotates therewith. The driver 23 is attached to a driver bar 24 receiving motion from a crank pin 25 on a crank disk 25^a through a link 25^c the crank disk being mounted on a shaft 25^b deriving motion from the driving shaft through gear wheels 26. The driver 23 is thus actuated positively. It will be seen that when the wire is fed forward by the feed rolls 8, 8^a the carrier 20 must be horizontal and the slug having been cut off said carrier is moved as described through an angle of about 90° to bring it to the necessary position to permit the driver entering the aperture in the carrier to drive the slug.

A horn 63 having a suitable head is provided to support the work in the usual man-

ner. Said horn is carried by a spindle 64 slidably mounted in bearings such as 66, a spring—not shown—serving to normally press the horn against or toward the presser or nozzle in the usual manner.

To release the work when about to be fed forward I provide the following mechanism. On the spindle 64 I fix a toothed rack 65 with which a spring pressed pawl 68 carried on a lever 69 is intended at the proper time to engage, a trip plate 67 serving to normally hold said pawl out of engagement. The lever 69 is actuated from a cam race 71 in the cam 7 so that the pawl 68 is reciprocated in a vertical direction and to the same extent for every revolution of the driving shaft. It will be seen that the pawl 68 will depress the horn an equal extent at every revolution of the driving shaft no matter what the thickness of the work may be as variations in thickness will simply permit the horn and consequently also the toothed rack 65 to rise to a greater or less extent.

To feed the work forward I provide an awl 27 carried on an arm 27^a of a vertical bar 27^b having bearings 29, 29^{*} engaging studs 29^a on the frame in such a manner that said vertical bar 27^b may be reciprocated on said studs and the arm 27^a and awl 27 receive the necessary vertical movement. The reciprocation as described of the bar 27^b is obtained as follows:—At the upper end of the machine head I suitably support a horizontal spindle 31^a on which I pivotally mount a rocking piece 31 having a horizontal spindle 32 one end of which has a cam roll and engages the cam groove 30 of cam 5 and the other end of which engages a projecting boss or lug 33 of the bearing 29^{*} so that the rotation of the cam 5 will raise and lower 29^{*} and consequently also awl 27.

For the purpose of imparting the necessary reciprocal movement to the awl I cause the bar 27^b to rotate or rock to a slight extent on the studs 29^a which rocking movement I obtain by the following means:—I suitably support a vertical spindle 38 in close proximity to the cam 5 and fixed to its upper end a lever 37 having a cam roll to engage a cam groove (not shown) in the upper face of cam 5. To the lower end of said spindle 38 I fix an arm or lever 39 whose free end I provide with a stud 39^a on which I mount an oblong or square block 40 said block being capable of rotating to a sufficient extent on said stud. I also pro-

vide the bar 27^b with an arm or extension 41 having the form more or less of a saddle piece to fit over the block 40 as will be understood from Figs. 4 and 6. The saddle piece or slide 41 is adjustable being adapted to be clamped in the desired position by a screw 42 and it will be seen that by slightly altering the angle at which the said slide is set the amount of throw or reciprocation of the awl will also be altered. To adjust the distance from the edge at which the slugs are to be driven into the sole I have shown an edge gage which has been made the subject of a divisional application and accordingly is not described here.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The combination, in a slugging or nailing machine in which the slugs are cut from a continuous length of wire and presented to a driver by a rotatable carrier, of a positively-operated four-motion feeding awl, an upright bar to which the awl is rigidly connected, vertically aligned bearings attached to said bar, stationary, vertical studs on which said bearings slide, and about which studs the bar can be rocked, means to reciprocate the bar to cause said awl to penetrate the stock and to be withdrawn therefrom alternately, and means to rock said bar positively and intermittently upon the vertical studs as fulcrum, to thereby impart to said awl a feeding movement and a return movement.

2. The combination, in a slugging or nailing machine in which the slugs are cut from a continuous length of wire and presented to a driver by a rotatable carrier, of an upright bar, an awl rigidly connected therewith, means to sustain said bar at its upper and lower ends and to permit vertical reciprocation thereof and also a rocking movement of said bar, means to reciprocate the bar positively to thereby move the awl into and out of the stock, and other means to rock the bar when in its depressed position and thereby cause the awl to feed the work, said latter means rocking the bar oppositely when in its elevated position to retract the awl into starting position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARK THOMAS DENNE.

Witnesses:

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F. HOOD.